File: B25.34

ANALYTICAL RESULTS OF SURFACE WATER SAMPLES COLLECTED FROM RACCOON CREEK
March 14, 2000 Sampling Event

Prepared for:

LYONDELL CHEMICAL/BEAZER EAST INC.

Prepared by:

Applied Hydrology Associates
Pittsburgh, PA
Denver, Colorado

May 5, 2000

Applied Hydrology Associates, Inc.

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Mitchell S. Brennan
5-10-2000

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents the results of surface water samples collected from Raccoon Creek at the Lyondell Chemical / Beazer East Inc. Monaca, PA site during the March 14, 2000 quarterly monitoring event. The samples were collected in compliance with Appendix D of the 1997 Consent Order and Agreement (1997 CO&A) between ARCO Chemical Company[1], BEI and the Pennsylvania Department of Environmental Protection (PADEP) dated October 20, 1997.

2.0 SAMPLING

Surface water samples were collected at Transect E as defined in the 1997 CO&A. The location of Transect E is shown in Figure 1. In addition, water elevations were measured in nearby monitoring wells and the results are presented in Appendix A.

A total of eight surface water samples, including a duplicate, were collected from Raccoon Creek on March 14, 2000. These samples were collected at the same three locations along Transect E as in previous sampling events. The locations are shown in Figure 2 and are at the center of the stream, and approximately 30 feet from the east and west banks. At the center location, samples were collected at three depths; 6 inches below the surface, 2 inches above the bottom, and midway between the surface and bottom. Samples from the east and west sides of the transect were collected at two depths; 2 inches above the bottom, and midway between the surface and bottom.

During sampling a boat was stationed at Transect E using a rope secured to the east and west shores of Raccoon Creek. The samples were collected by using a peristaltic pump to pump water from the desired depth into three 40-ml vials preserved with hydrochloric acid. Samples were collected from the required depths utilizing tubing secured to a vertical steel rod lowered from the boat until it rested on the bottom of the creek. The rod did not penetrate the sediments on the creek bottom because a 1-foot diameter disc constructed of steel mesh is fastened perpendicular to the bottom of the rod.

Two tubes were used. The bottom of the "deep sample tube" was secured to the probe 2 inches from the bottom of the probe. The bottom of the "mid-depth sample tube" is adjustable and was secured to the probe mid-depth at each location. Care was taken not to disturb the sediments at the sampling location and the pumped water was closely monitored to ensure sediment was not included in the sample. One gallon of water was pumped through the tubing before each sample was obtained in order to purge the tubing.

[1] ARCO Chemical Company is now Lyondell Chemical Worldwide

The samples were uniquely numbered as follows to identify the location, depth and date of sampling:

RC-EC-00-0300

Where:

RC	indicates Raccoon Creek
EC	indicates Transect E and location (C=Center, L = Left bank, R = Right bank [facing downstream])
00	indicates sample depth in feet and tenths of a foot (0.0 feet)
0300	indicates the month and year collected (March 2000)

Samples were logged onto a chain of custody form (included in of the Analytical Report in Appendix B) and stored on ice until receipt by Precision Testing Labs in Toms River, NJ. Reliance analyzed the samples using USEPA Method 524.2 for BTEXS.

3.0 RESULTS

The analytical results are presented in Table 1. Benzene was detected in all of the seven locations at concentrations ranging from 0.18 µg/L in Sample RC-EC-70-0300 to 1.01 µg/L in sample RC-EC-00-0300. Sampling locations and depths are shown on Figure 2, along with the concentration of benzene at each location. Water levels in wells near Raccoon Creek are presented in Appendix A.

Table 1
Summary of Analytical Results for Samples Collected from Raccoon Creek

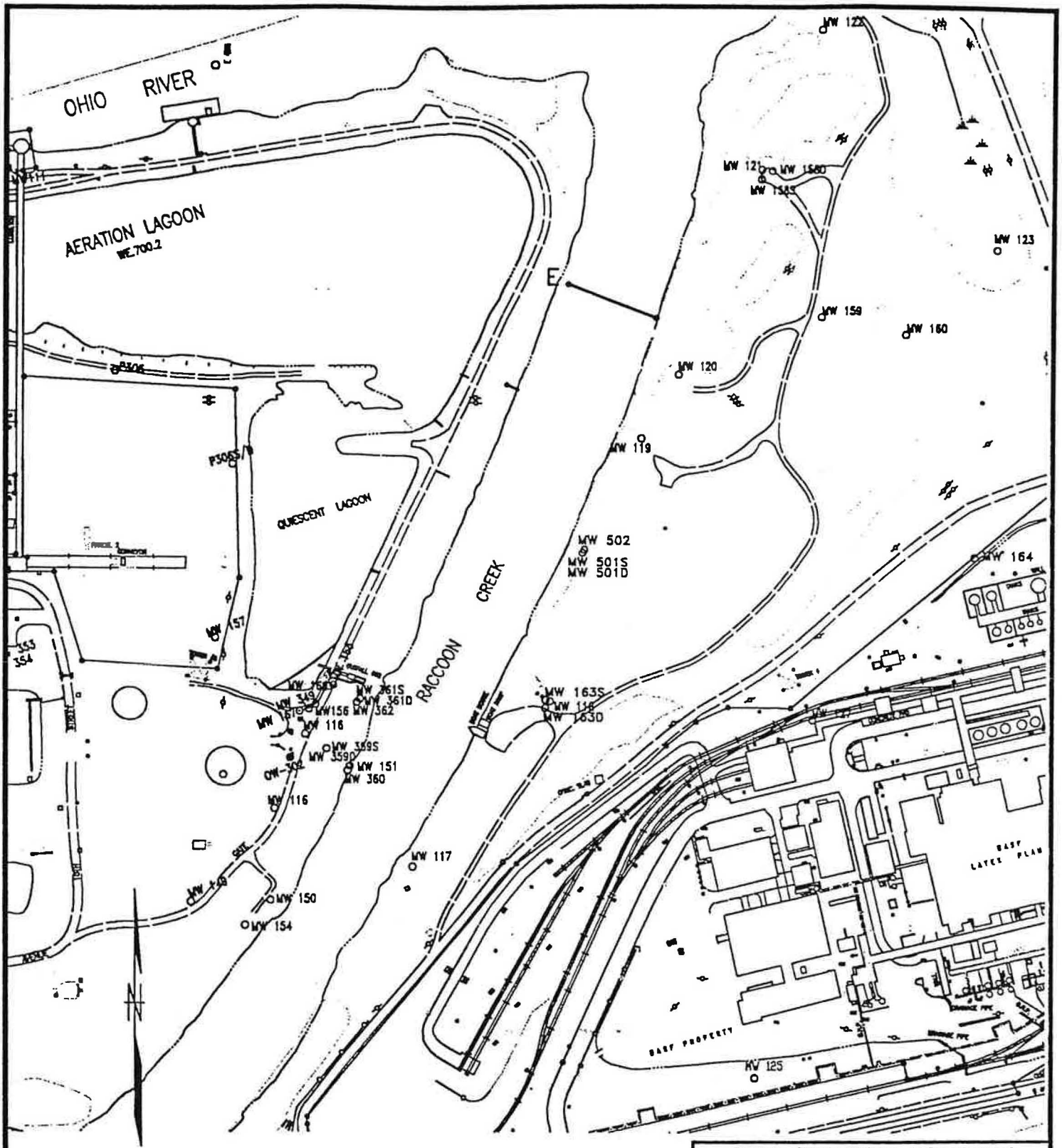
Sample Name	Benzene	Toluene	Ethylbenzene	Xylene	Styrene
RC-ER-33-0300	0.74	1.30	0.35	2.13	< 0.58
RC-ER-00-0300	0.58	1.05	0.34	2.08	< 0.58
RC-EL-21-0300	0.87	< 0.6	< 0.22	1.27	< 0.58
RC-EL-00-0300	0.78	< 0.6	< 0.22	0.61	< 0.58
RC-EC-70-0300	0.18	< 0.6	< 0.22	< 0.22	< 0.58
RC-EC-33-0300	0.87	1.87	0.40	2.75	< 0.58
RC-EC-00-0300	1.01	4.74	2.04	12.03	< 0.58
RC-EC-00-0300A	0.70	1.32	0.23	1.53	< 0.58

The analytical data were validated upon receipt and found to be acceptable. A Data Validation Report is provided in Appendix B. Table 2 presents the historical concentration of benzene in Raccoon Creek at Transect E during all monitoring events to date.

Historic Benzene Concentrations at Transect E
(ug/L)

Sampling Location	Sampling Depth	7/23/97	10/28/97	2/25/98	5/21/98	7/29/98	10/27/98	2/3/99	4/27/99	7/22/99	10/20/99	3/14/00
30 Feet off West Bank	Mid-depth	0.28	<0.13	<0.13	0.70	<0.13	1.57(1)	0.37	< 0.66	<0.13	0.18(1)	0.87
30 Feet off West Bank	Deep	0.81	<0.13	<0.13	0.70	<0.13	0.61(1)	0.49	< 0.66	<0.13	0.27	0.78
Center of Creek	Shallow	0.24	<0.13	0.38	0.70	<0.13	<0.13	0.61(1)	< 0.66(1)	<0.13(1)	0.43	0.86(1)
Center of Creek	Mid-Depth	0.18	<0.13	0.49	0.64	<0.13	0.2	0.64	< 0.66	<0.13	0.42	0.87
Center of Creek	Deep	0.46	<0.13	0.30	0.60	<0.13	<0.13	0.69	< 0.66	<0.13	0.20	0.18
30 Feet off East Bank	Mid-depth	0.16	<0.13	<0.13	<0.13	0.13	0.52	< 0.13	< 0.66	<0.13	0.23	0.58
30 Feet off East Bank	Deep	<0.13	<0.13	0.14	0.22	0.22	<0.13	< 0.13	< 0.66	<0.13	<0.13	0.74

(1) Results shown are the average of the blind duplicate samples.

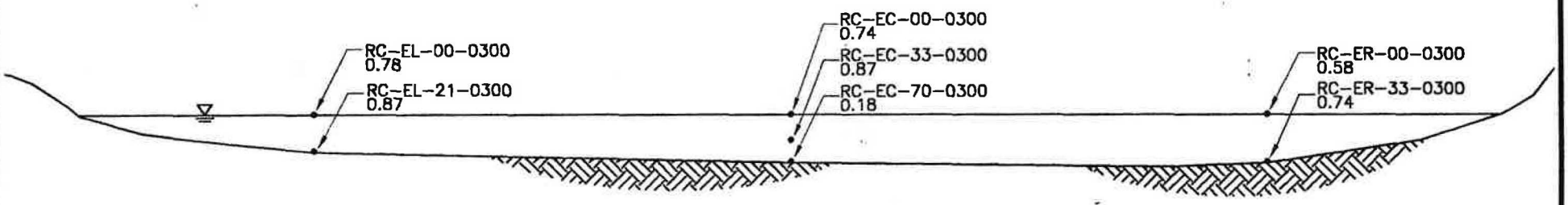


Applied Hydrology Associates, Inc.

ARCO CHEMICAL COMPANY
BEAVER VALLEY PROPERTY
RACCOON CREEK QUARTERLY MONITORING

FIGURE 1 TRANSECT AND MONITORING WELL LOCATIONS

DESIGN SM	DATE 6/27/98	FILE REFERENCE TRANSECT.DWG
DRAWN MJZ	SCALE	
CHECKED	APPROVED	PROJECT NO. 36-5



CREEK SECTION
LOOKING DOWNSTREAM

LEGEND

- SURFACE WATER SAMPLE LOCATION

ALL CONCENTRATIONS IN ug/L

20' 0 20'

SCALE IN FEET

Applied Hydrology Associates, Inc.

LYONDELL CHEMICAL
BEAVER VALLEY PROPERTY
RACCOON CREEK QUARTERLY MONITORING

FIGURE 2

SURFACE WATER BENZENE CONCENTRATIONS AT TRANSECT "E"

MARCH 14, 2000

DESIGN: SM	DATE: 8/17/98	FILE REFERENCE: BENZENE.dwg	
DRAWN: JLS	SCALE: NOT TO SCALE		
CHECKED:	APPROVED:	PROJECT NO.: 38-5	FIGURE NO.:

Appendix A

Groundwater Elevations, East and West Sides of Raccoon Creek

GROUNDWATER LEVELS ON THE EAST AND WEST SIDES OF RACCOON CREEK
March 14, 2000

Well Number	Top of Casing (TOC) (ft. amsl)	Depth to SPL from TOC (2) (ft. amsl)	Depth to Water from TOC (2) (ft. amsl)	Calculated Water Level Elevation (1) (ft. amsl)	Calculated SPL Thickness (3) (ft. amsl)	Comments
Monitoring Wells Screened in Silty Clay Unit						
OTH AREA						
MW - 360	685.84	ND	3.60	682.24	N/A	
MW - 170	706.70	ND	22.49	684.21	N/A	
MW - 362	689.43	ND	5.80	683.63	N/A	
RACCOON CREEK AREA						
MW- 118	690.39	ND	6.72	683.67	N/A	
MW - 502	701.86	ND	18.60	683.26	N/A	
MW - 119	705.59	ND	22.33	683.26	N/A	
MW - 120	709.42	ND	26.19	683.23	N/A	
MW - 121	713.90	ND	30.55	683.35	N/A	
MW - 152	696.35	ND	13.16	683.19	N/A	
Monitoring Wells Screened in Upper Sand and Gravel Unit						
OTH AREA						
MW - 344	709.42	ND	25.67	683.75	N/A	
MW - 359S	692.93	ND	9.49	683.44	N/A	
MW - 361S	689.40	ND	6.02	683.38	N/A	
MW - 169	707.93	ND	0.00		N/A	Well had excessive pressure build up from OTH Sprage event (3/8/00 - 3/9/00). No reading taken
MW - 167	711.06	ND	27.63	683.43	N/A	Top of casing changed from 707.36 to 711.06 on 11/98 to accommodate respiration monitoring well head. Monitoring well stick up is 3.70 above orig. TOC
RACCOON CREEK AREA						
MW - 163S	690.87	ND	7.46	683.41	N/A	
MW - 501S	701.30	ND	18.30	683.00	N/A	
MW - 162S	706.05	ND	22.78	683.27	N/A	
MW - 159	708.99	ND	25.64	683.35	N/A	
MW - 160	701.00	ND	17.74	683.26	N/A	
MW - 158S	713.60	ND	30.26	683.34	N/A	
MW - 122	692.78	ND	9.44	683.34	N/A	
Note: See figure 1						
(1) Calculated values, based on Elevation of TOC minus Depth to Water from TOC.						
(2) Measured from top of casing using the MMA Interface Probe. ND means no SPL was detected.						
(3) Calculated values, based on Depth to Water from TOC minus Depth to SPL from TOC. N/A means not applicable, no SPL was detected.						

GROUNDWATER LEVELS ON THE EAST AND WEST SIDES OF RACCOON CREEK
March 14, 2000

Well Number	Top of Casing (TOC) (ft. amsl)	Depth to SPL from TOC (2) (ft. amsl)	Depth to Water from TOC (2) (ft. amsl)	Calculated Water Level Elevation (1) (ft. amsl)	Calculated SPL Thickness (3) (ft. amsl)	Comments
Monitoring Wells Screened in Lower Sand and Gravel Unit						
OTH AREA						
MW 345	708.91	ND	25.60	683.31	N/A	
MW 361D	689.35	ND	6.08	683.27	N/A	
MW 359D	692.80	ND	9.49	683.31	N/A	
RACCOON CREEK AREA						
MW 163D	689.62	ND	6.33	683.29	N/A	
MW 501D	701.44	ND	18.20	683.24	N/A	
MW 166D	703.95	ND	20.75	683.20	N/A	
MW 158D	712.04	ND	28.84	683.20	N/A	

Water Levels in Raccoon Creek and Ohio River				
RACCOON CREEK AREA STAFF GAUGE				
Time of Observation	**Staff Gauge Elevation (ft. amsl) (4) (5)**	**Staff Gauge Reading**	**Calculated Water Level Elevation (ft. amsl)**	**Comments**
8:55	685.00	1.38	683.38	
9:46	685.00	1.50	683.50	
8:40	685.96	3.40	683.36	
10:04	685.96	3.55	683.51	
Note: See figure 1				

(1) Calculated values, based on Elevation of TOC minus Depth to Water from TOC.

(2) Measured from top of casing using the MMA Interface Probe. ND means no SPL was detected.

(3) Calculated values, based on Depth to Water from TOC minus Depth to SPL from TOC. N/A means not applicable, no SPL was detected.

(4) Elevation 685.00 is equivalent to 3.00 mark on staff gauge at Raccoon Creek

(5) Elevation 685.96 is equivalent to 6.00 mark on staff gauge at Ohio River

Appendix B

Data Validation Report

Applied Hydrology Associates, Inc.

1200 South Parker Road, Suite 100 Denver, CO 80231 Tel: (303) 873-0164 Fax: (303) 873-6110

M E M O R A N D U M

TO: **Files**
FROM: **Skip Meier, Applied Hydrology Associates**
DATE: **May 5, 2000**
SUBJECT: **Data Validation Results, Lyondell Chemical Worldwide Beaver Valley Property**

Data validation was performed on the volatile organic analytical data from eight surface water samples obtained from Raccoon Creek on March 14, 2000 and also on a Rinsate Blank and Trip Blank. The validation was performed in accordance with the "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Precision Testing Labs performed the analysis using EPA Method 524.2. The samples reviewed included:

Field Sample ID	Lab Sample ID
RC-ER-33-0300	A-104.1
RC-ER-00-0300	A-104.2
RC-EL-21-0300	A-104.3
RC-EL-00-0300	A-104.4
RC-EC-70-0300	A-104.5
RC-EC-33-0300	A-104.6
RC-EC-00-0300	A-104.7
RC-EC-00-0300A	A-104.8
Rinsate Blank	A-104.9
Trip Blank	A-104.10

Items reviewed and actions taken were as follows:

√ **Method:**
The ten samples were analyzed for BTEXS by method USEPA 524.2 on March 18 and 19, 2000.

√ **Holding Time:**
All Samples were analyzed within the 14-day holding time.

√ **Blanks:**
No target compounds were detected in the associated method blank.

√ **System Monitoring Compounds:**
The "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" indicate that "Recoveries for system monitoring compounds in volatile samples and blanks must be within the limits specified in the Method." However, Method 524.2 does not specify a required recovery. Nevertheless, 4-

bromofluorobenzene and 1,2-dichlorobenzene-d4 surrogate recoveries were within 98-125 percent and this is acceptable.

√ **Internal Standards:**
All fluorobenzene internal standards were within the established criteria for area internal standard and retention time.

√ **GC/MS Instrument Performance Check:**
All bromofluorobenzene (BFB) tunes met the ion abundance criteria. Analysis of the instrument performance check solution was performed at the beginning of each 12-hr period during which the samples were analyzed.

√ **Initial Calibrations:**
The initial calibration performed on October 21, 1999 for Instrument HP5971A met the 30 percent relative standard deviation (RSD) and 0.05 minimum relative response factor criteria for all compounds.

√ **Continuing Calibrations:**
Continuing calibration was run and compared to the correct initial calibration. All continuing calibrations met the 25 percent difference and minimum relative response factor criteria for all compounds.

√ **Matrix Spike/Duplicate:**
The matrix spike/duplicate results for recovery and RPD were within the Quality Control limits. However, the matrix spike recover analysis was performed on a blank since not enough sample was available.

√ **Target Compound Indentification/Quantitation:**
No problems were identified with compound identification or quantities.

√ **Field Duplicate:**
A field duplicate was collected during this sampling event. The duplicate sample was denoted by an "A" at the end of the sample name. The pair is RC-EC-00-0300 and duplicate RC-EC-00-0300A. Table 1 below summarizes the RPD for the sample/duplicate pair[1].

Table 1: Relative Percent Difference (RPD)

Sample Name	Benzene (ppb)	RPD (%)	Toluene (ppb)	RPD (%)	Ethyl-Benzene (ppb)	RPD (%)	Xylene (ppb)	RPD (%)	Styrene (ppb)	RPD (%)
RC-EC-00-0300	1.01	34	4.72.	112	2.04	159	12.03	154	ND	NA
RC-EC-00-0300A	0.71		1.32		0.23		1.53		ND	NA

ND = Non Detect
NA = Not Applicable

√ **Summary:**
No inconsistencies were noted except that poor agreement was seen between the duplicate sample pair RC-EC-00-0300 and RC-EC-00-0300A. (See Table 1). No BTEXS compounds were detected in either the trip blank or the field blank.

[1] The equation for calculating RPD is: $RPD = 2 * \frac{|S - D|}{S + D} * 100$ where S = sample concentration and D = duplicate concentration

PRECISION TESTING LABS INC.

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Corporate Address 726 Bernice Ct. Toms River, NJ 08753
Tel. (732) 914-1515 Fax (732) 914-1616

ANALYTICAL REPORT

For
Applied Hydrology Associates, Inc.
Monaca, PA 15061

Project: Raccoon Creek

PRECISION TESTING LABS INC.

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ANALYTICAL DATA REPORT

Applied Hydrology Associates, Inc.
Monaca, PA 15061
Project: Raccoon Creek

Sample ID	Lab ID #
RC-ER-33-0300	A-104.1
RC-ER-00-0300	A-104.2
RC-EL-21-0300	A-104.3
RC-EL-00-0300	A-104.4
RC-EC-70-0300	A-104.5
RC-EC-33-0300	A-104.6
RC-EC-00-0300	A-104.7
RC-EC-00-0300A	A-104.8
RINSATE BLANK	A-104.9
TRIP BLANK	A-104.10

V. Bandeira
Manager

PRECISION TESTING LABS INC.

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TABLE OF CONTENTS

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Corporate Address 726 Bernice Ct. Toms River, NJ 08753
Tel. (732) 914-1515 Fax (732) 914-1616

LABORATORY CHRONICLE

Customer Name Applied Hydrology Associates, Inc.
Date Received: 03/15/2000
Date Sampled: 03/14/2000
Sample ID: As per chain of custody

Organic Extraction:

1 Acids
2 Base / Neutrals
3 Pesticides/PCB's
4 TPHC

Analysis:

1 Volatiles 03/18/2000 03/19/2000
2 Acids
3 Base/Neutrals
4 Pesticides/PCB's
5 TPHC

Inorganics:

1 Metals
2 Cyanides
3 Phenols

Other Analysis:

Supervisor
Review & Approval

NON-CONFORMANCE SUMMARY

Precision Testing Labs received 10 water samples including Rinsate Blank and Trip blank for VOA (EPA 524.2) from AHA on 15 March 2000. Samples consisted of 10 vials.

Matrix spike recovery analysis was performed on a blank since not enough sample was provided, results are attached.

All analyses were performed within the required holding time.

STANDARD OPERATING PROCEDURE
METHOD 524.2

1. **Scope**

This is the general method for the procedure used to identify purgeable volatile organics in portable water. The sample is purged with ultra high purity helium and concentrated into a trap. The volatiles are then thermally desorbed onto a megabore column and identified using a mass spectrometer detector.

2. **Equipment and Apparatus**

A. Sample containers- 40ml screw caps amber vials.

B. Purge and Trap System.
   1. 25cm VOCARB 3000 trap.

C. Glassware
   1. 20 ml fritted purging vessels.
   2. 25 ml teflon sealed syringe with lever lock assembly.
   3. 10 µL syringes.

D. Gas Chromographic / Mass Spectrometer.
   1. Column type J&W
      75 m, 0.53 mm ID, DB624 3 microns

E. Apparatus Conditions
   1. Tekmar (purge and trap)

a.	Purge time	:	2 min.
b.	Desorb time and temp.	:	250° for 2 min.
c.	Bake time and temp.	:	260° for 12 min.
d.	Flow rate	:	15 cc/min.

   2. GC Conditions

a.	Column flow	15 cc/min.
b.	Initial temp.	35° C
c.	Ramping Rate	6° C/min.
d.	Final temp.	200° C
e.	Run time	47.25 min.
f.	Initial time	6 min.

3. **Stock Standards**

A. Internal Standard
   1. Flourobenzene

B. Surrogates
   1. 1,2-dichlorobenzene-d4
   2. 4-bromoflurobenzene

C. Prepare standard solutions for all target compounds and surrogates at 20 ppm.

D. Prepare internal standard at 20 ppm in methanol.
   1. Prepare all standards and store in teflon sealed 1 ml vials.

4. Run Sequence

A. Tune Instrument

1. Inject 1μL of 25 ppm BFB into GC.
   a. Tune must pass against criteria.
   b. Tune must be run before any samples, blank or calibrations can be run.
   c. From time to tune 12 hours are available to run all QC data and samples.

B. Three Point Calibration Curve

1. Purge five (3) concentrations of standard solutions containing all the target analysis at 1 ppb, 2 ppb, 5 ppb.
2. The above standard must be run within 12 hours of injecting the BFB tune.
3. Created a calibration curve with the above standard runs.
   a. If the 30% RSD deviation is exceeded the standards must be run again (still within 12 hours)
4. Create an identification file from this calibration curve for automated quantification.

C. If time remains in the 12-hour run period go to step F.

D. If the 12-hour period has expired, a new tune must be injected and a new sequence must be started.

E. Once an initial calibration curve is established a continuing calibrations check may be run. A continuing calibration check is required every time the mass spectrometer is tuned.

1. 2 ppb concentration of all target compounds is purged and quanted against current ID file.
2. Check the response factors of this run against the average RF of the calibration file. The RF of the continuing calibration must be within ± 50% D (difference) of the 5 point for all compounds.
3. The area counts of internal standard and surrogates must not be decreased by >30% from the most recent continuing calibration standard nor decrease by >50% from the initial calibration standard.

F. Daily Blank

1. Purge 20 ml of laboratory reagent water (nanopure) with 5 ppb internal standard and 5 ppb each surrogate.
2. Run this blank and quant against current ID file.
3. If blank does not meet criteria, it must be rerun before analyzing any samples.

G. Samples

1. Fill 25 ml syringe until it overflows with sample. Then adjust the volume to 20 ml exactly.
2. Inject 5 μl each 25 ppm internal standard and surrogate standard solution into each sample.
3. Run and quant against the current 5 point calibration curves.
4. Any sample with target compound over 5 ppb must be rerun at the appropriate dilution.
5. Any sample not injected in 12-hour period must be rerun.

H. Quality Control Sample (QCS)

1. Analyze a QCS from an external source at least quarterly.

PRECISION TESTING LABS INC.

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CERTIFICATE OF ANALYSIS

Customer: Lyondell Chemical
Sample: Aqueous Samples
Date Sampled: 14 March 2000
Lab ID: A-104
Reference: **AHA / Monaca**

20 March 2000

Units: µg/L

Sample ID	Benzene	Toluene	Ethylbenzene	Xylene	Styrene
RC-ER-33-0300	0.74	1.30	0.35	2.13	< 0.58
RC-ER-00-0300	0.58	1.05	0.34	2.08	< 0.58
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RC-EL-00-0300	0.78	< 0.6	< 0.22	0.61	< 0.58
RC-EC-70-0300	0.18	< 0.6	< 0.22	< 0.22	< 0.58
RC-EC-33-0300	0.87	1.87	0.40	2.75	< 0.58
RC-EC-00-0300	1.01	4.74	2.04	12.03	< 0.58
RC-EC-00-0300A	0.71	1.32	0.23	1.53	< 0.58
Rinsate Blank	< 0.13	< 0.6	< 0.22	< 0.22	< 0.58
Trip Blank	< 0.13	< 0.6	< 0.22	< 0.22	< 0.58

V. Bandeira
Manager

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0088.D
Acq On : 18 Mar 2000 10:51 pm
Sample : A-104.1
Misc : AHA - Lyondell - RC-ER-33-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:26 2000

Vial: 11
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.69	96	657396	5.00	ug/L	0.02
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.84	95	168219	4.94	ug/L	0.01
Spiked Amount 5.000			Recovery = 98.80%			
55) 1,2-dichlorobenzene-d4	31.02	152	127007	5.21	ug/L	0.00
Spiked Amount 5.000			Recovery = 104.20%			
Target Compounds						Qvalue
19) Benzene	11.85	78	95440	0.74	ug/L	96
26) Toluene	17.58	91	163041	1.30	ug/L	97
35) Ethylbenzene	22.42	91	49850	0.35	ug/L	90
36) m&p-xylenes	22.81	106	101222	0.95	ug/L	96
37) o-xylene	24.09	91	111601	1.18	ug/L	89
45) n-propylbenzene	26.78	91	32830	0.19	ug/L	89
48) 1,3,5-trimethylbenzene	27.44	105	48168	0.48	ug/L	100
50) 1,2,4-trimethylbenzene	28.69	105	201574	2.20	ug/L	99

(#) = qualifier out of range (m) = manual integration

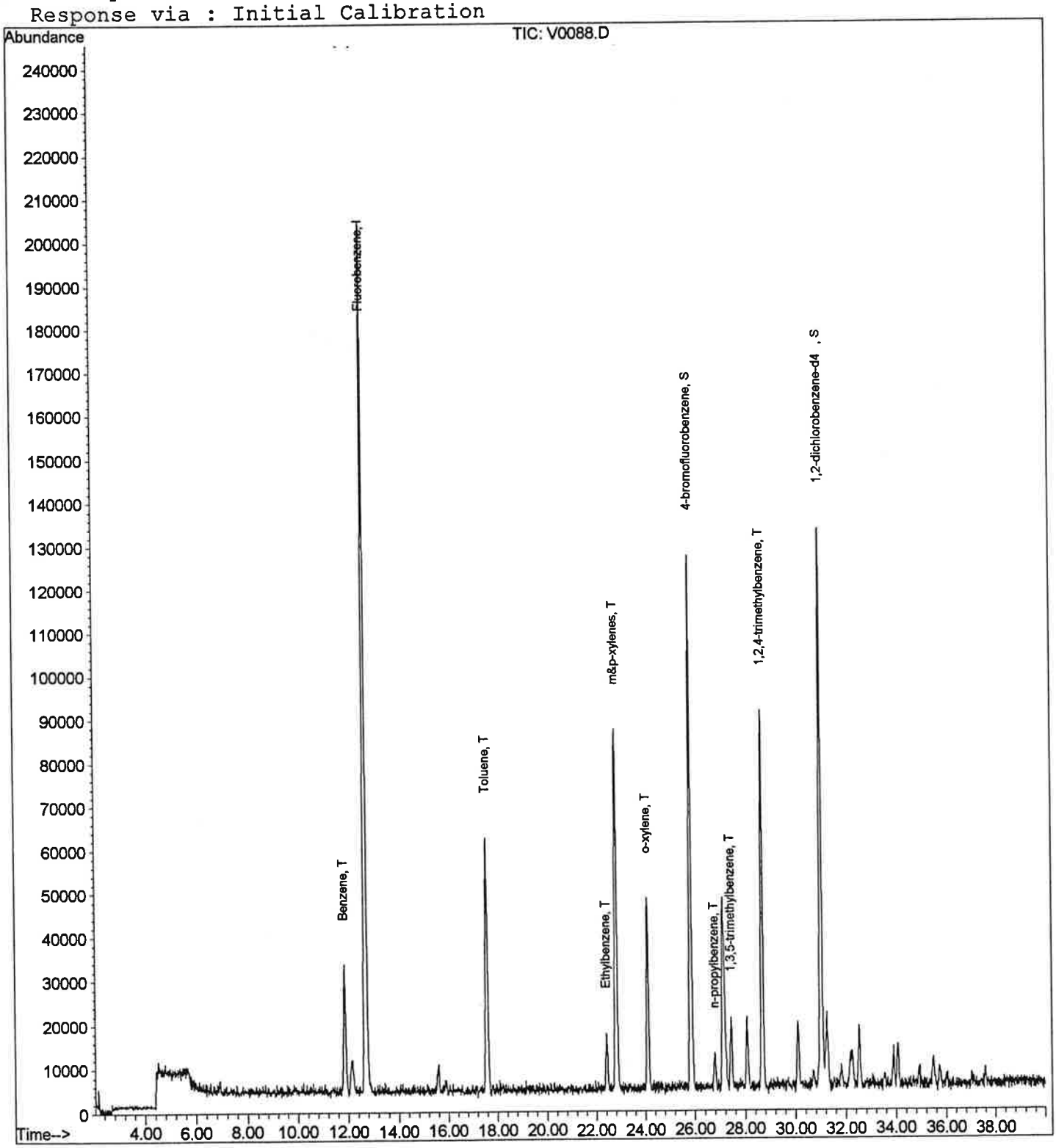
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0088.D
Acq On : 18 Mar 2000 10:51 pm
Sample : A-104.1
Misc : AHA - Lyondell - RC-ER-33-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:26 2000

Vial: 11
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0089.D
Acq On : 18 Mar 2000 11:39 pm
Sample : A-104.2
Misc : AHA - Lyondell - RC-ER-00-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:25 2000

Vial: 12
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.69	96	703063	5.00	ug/L	0.02
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.83	95	177529	4.88	ug/L	0.00
Spiked Amount 5.000			Recovery = 97.60%			
55) 1,2-dichlorobenzene-d4	31.01	152	135878	5.21	ug/L	-0.01
Spiked Amount 5.000			Recovery = 104.20%			
Target Compounds						Qvalue
19) Benzene	11.85	78	80800	0.58	ug/L	100
26) Toluene	17.56	91	140877	1.05	ug/L	98
35) Ethylbenzene	22.41	91	51119	0.34	ug/L	97
36) m&p-xylenes	22.80	106	107905	0.95	ug/L	96
37) o-xylene	24.09	91	114771	1.13	ug/L	95
45) n-propylbenzene	26.77	91	41477	0.22	ug/L	97
48) 1,3,5-trimethylbenzene	27.43	105	56964	0.53	ug/L	96
50) 1,2,4-trimethylbenzene	28.68	105	236676	2.41	ug/L	97

(#) = qualifier out of range (m) = manual integration
V0089.D RUN524.M Mon Mar 20 11:40:10 2000

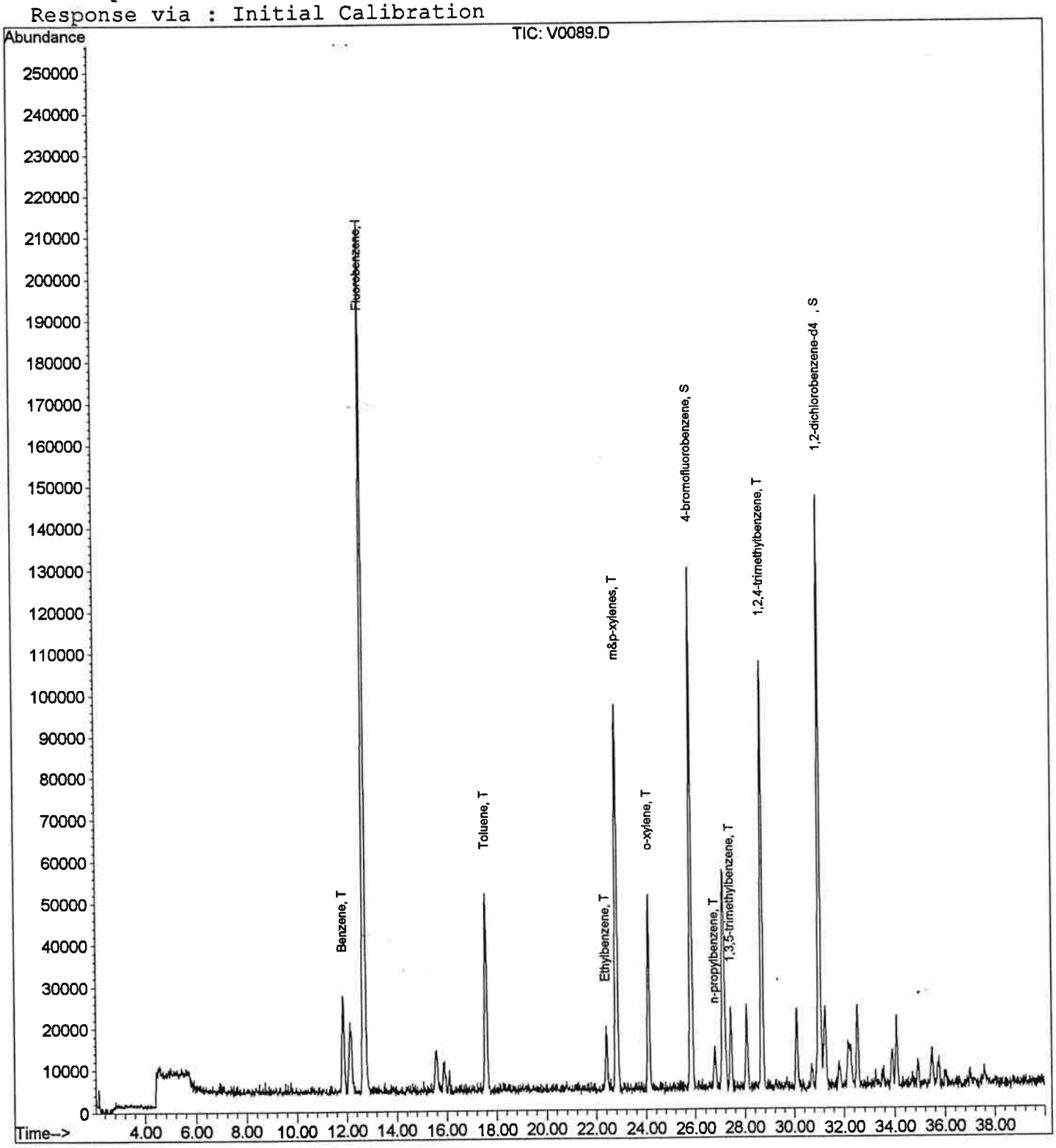
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0089.D
Acq On : 18 Mar 2000 11:39 pm
Sample : A-104.2
Misc : AHA - Lyondell - RC-ER-00-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:25 2000

Vial: 12
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0090.D
Acq On : 19 Mar 2000 12:29 am
Sample : A-104.3
Misc : AHA - Lyondell - RC-EL-21-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:24 2000

Vial: 13
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.69	96	673178	5.00	ug/L	0.02
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.84	95	168101	4.82	ug/L	0.01
Spiked Amount 5.000			Recovery = 96.40%			
55) 1,2-dichlorobenzene-d4	31.02	152	127885	5.12	ug/L	0.00
Spiked Amount 5.000			Recovery = 102.40%			
Target Compounds						Qvalue
19) Benzene	11.85	78	115365	0.87	ug/L	94
26) Toluene	17.57	91	71675	0.56	ug/L	96
35) Ethylbenzene	22.42	91	22437	0.15	ug/L	97
36) m&p-xylenes	22.81	106	60115	0.55	ug/L	99
37) o-xylene	24.09	91	69867	0.72	ug/L	96
48) 1,3,5-trimethylbenzene	27.43	105	34246	0.34	ug/L	92
50) 1,2,4-trimethylbenzene	28.68	105	145130	1.55	ug/L	98

(#) = qualifier out of range (m) = manual integration

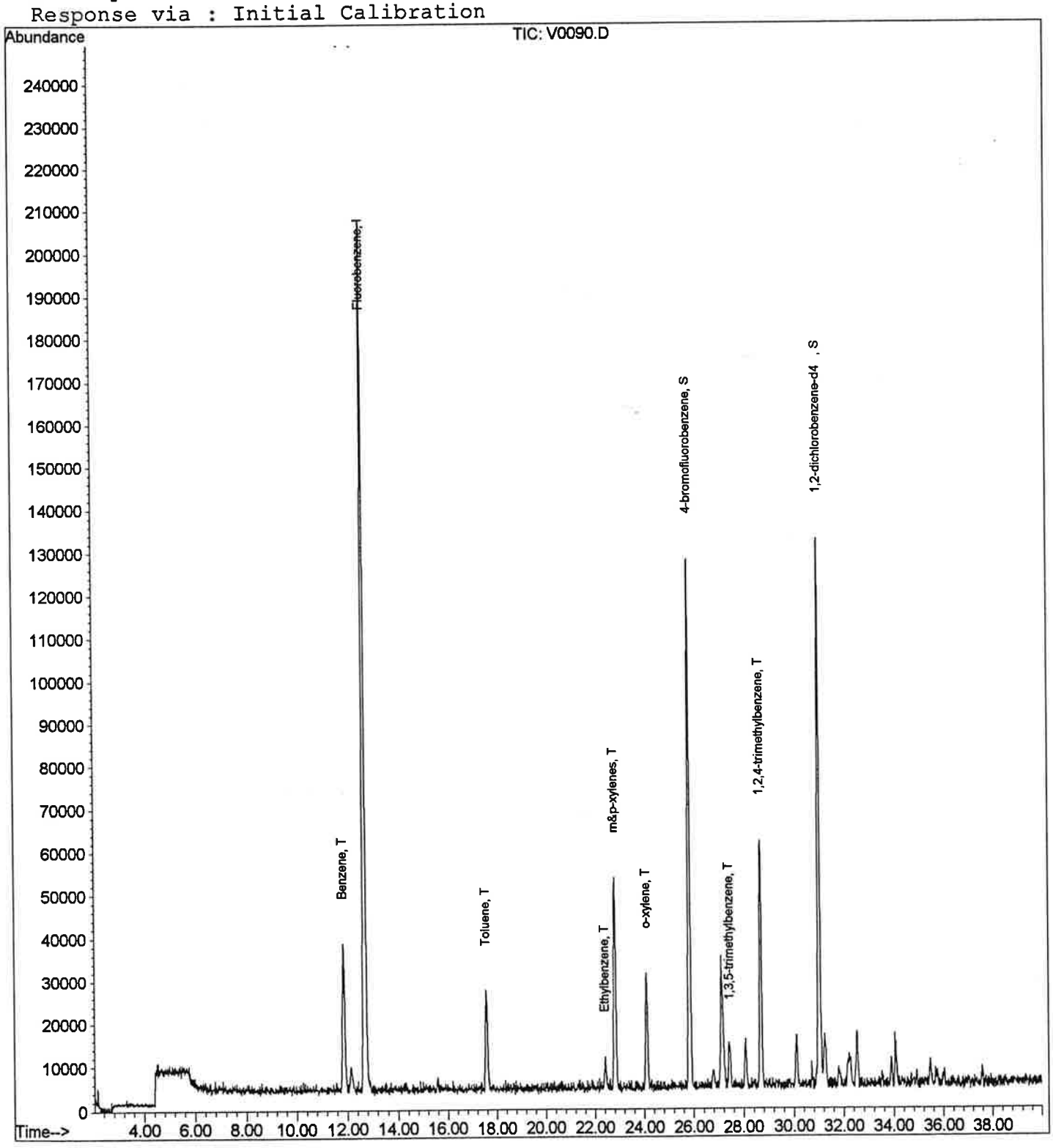
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0090.D
Acq On : 19 Mar 2000 12:29 am
Sample : A-104.3
Misc : AHA - Lyondell - RC-EL-21-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:24 2000

Vial: 13
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0091.D
Acq On : 19 Mar 2000 1:18 am
Sample : A-104.4
Misc : AHA - Lyondell - RC-EL-00-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:23 2000

Vial: 14
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.70	96	715830	5.00	ug/L	0.03
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.83	95	184038	4.97	ug/L	0.00
Spiked Amount 5.000			Recovery = 99.40%			
55) 1,2-dichlorobenzene-d4	31.01	152	137646	5.18	ug/L	-0.01
Spiked Amount 5.000			Recovery = 103.60%			
Target Compounds						Qvalue
19) Benzene	11.85	78	109759	0.78	ug/L	98
26) Toluene	17.56	91	58373	0.43	ug/L	88
36) m&p-xylenes	22.80	106	31422	0.27	ug/L	92
37) o-xylene	24.08	91	34950	0.34	ug/L	90
50) 1,2,4-trimethylbenzene	28.67	105	47837	0.48	ug/L	92

(#) = qualifier out of range (m) = manual integration

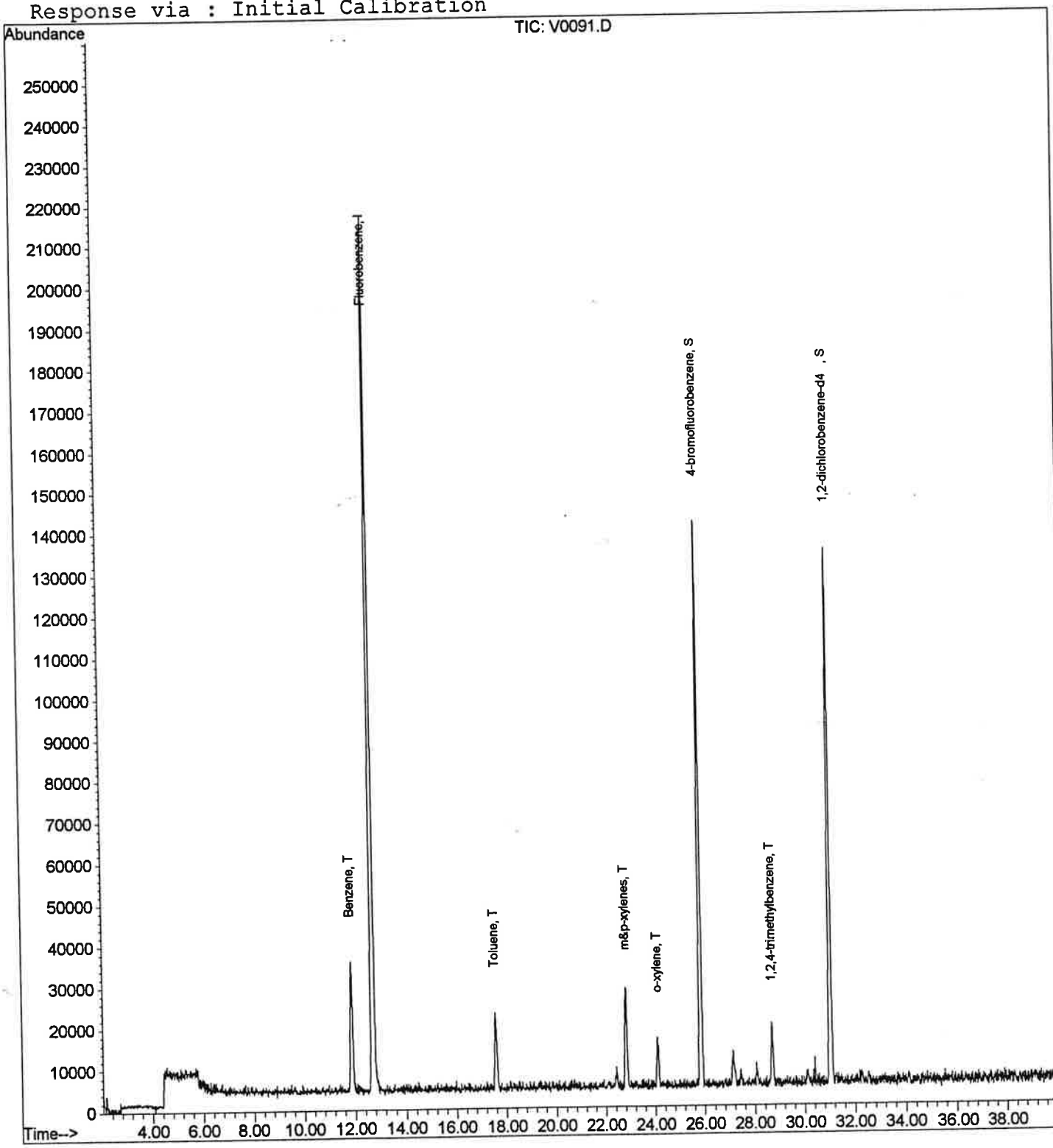
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0091.D
Acq On : 19 Mar 2000 1:18 am
Sample : A-104.4
Misc : AHA - Lyondell - RC-EL-00-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:23 2000

Vial: 14
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0092.D
Acq On : 19 Mar 2000 2:07 am
Sample : A-104.5
Misc : AHA - Lyondell - RC-EC-70-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:23 2000

Vial: 15
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.69	96	711244	5.00	ug/L	0.02
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.84	95	183732	4.99	ug/L	0.01
Spiked Amount 5.000			Recovery = 99.80%			
55) 1,2-dichlorobenzene-d4	31.01	152	135371	5.13	ug/L	-0.01
Spiked Amount 5.000			Recovery = 102.60%			
Target Compounds						Qvalue
19) Benzene	11.86	78	24555	0.18	ug/L	100

(#) = qualifier out of range (m) = manual integration
V0092.D RUN524.M Mon Mar 20 11:40:40 2000

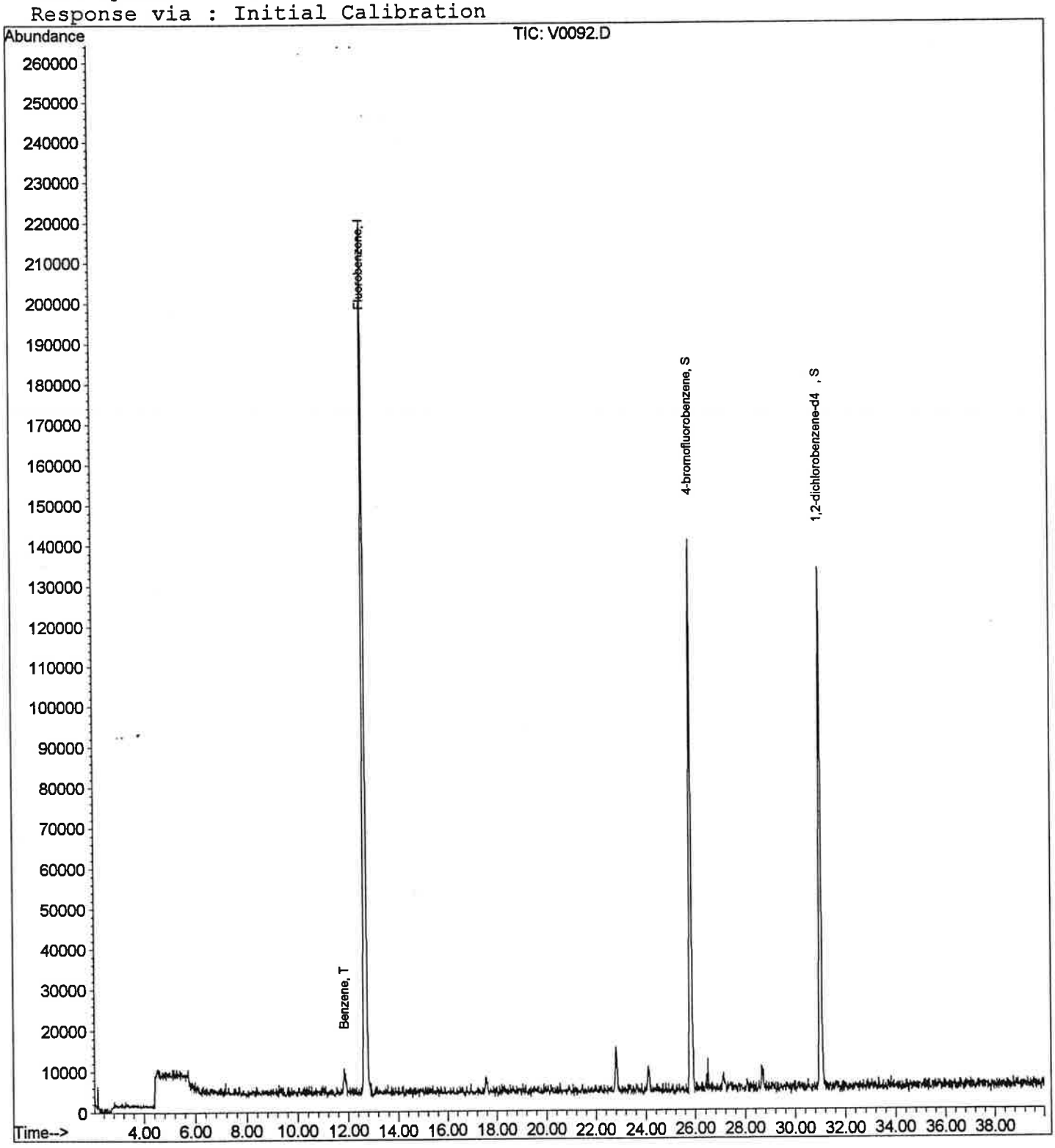
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0092.D
Acq On : 19 Mar 2000 2:07 am
Sample : A-104.5
Misc : AHA - Lyondell - RC-EC-70-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:23 2000

Vial: 15
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0093.D
Acq On : 19 Mar 2000 2:56 am
Sample : A-104.6
Misc : AHA - Lyondell - RC-EC-33-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:22 2000

Vial: 16
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.69	96	753555	5.00	ug/L	0.02
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.83	95	194511	4.99	ug/L	0.00
Spiked Amount 5.000			Recovery = 99.80%			
55) 1,2-dichlorobenzene-d4	31.02	152	141236	5.05	ug/L	0.00
Spiked Amount 5.000			Recovery = 101.00%			
Target Compounds						Qvalue
19) Benzene	11.84	78	128321	0.87	ug/L	94
26) Toluene	17.58	91	268856	1.87	ug/L	97
35) Ethylbenzene	22.42	91	65438	0.40	ug/L	98
36) m&p-xylenes	22.80	106	155923	1.28	ug/L	96
37) o-xylene	24.09	91	159512	1.47	ug/L	99
45) n-propylbenzene	26.79	91	40080	0.20	ug/L	98
48) 1,3,5-trimethylbenzene	27.43	105	67864	0.59	ug/L	99
50) 1,2,4-trimethylbenzene	28.68	105	274698	2.61	ug/L	96

(#) = qualifier out of range (m) = manual integration

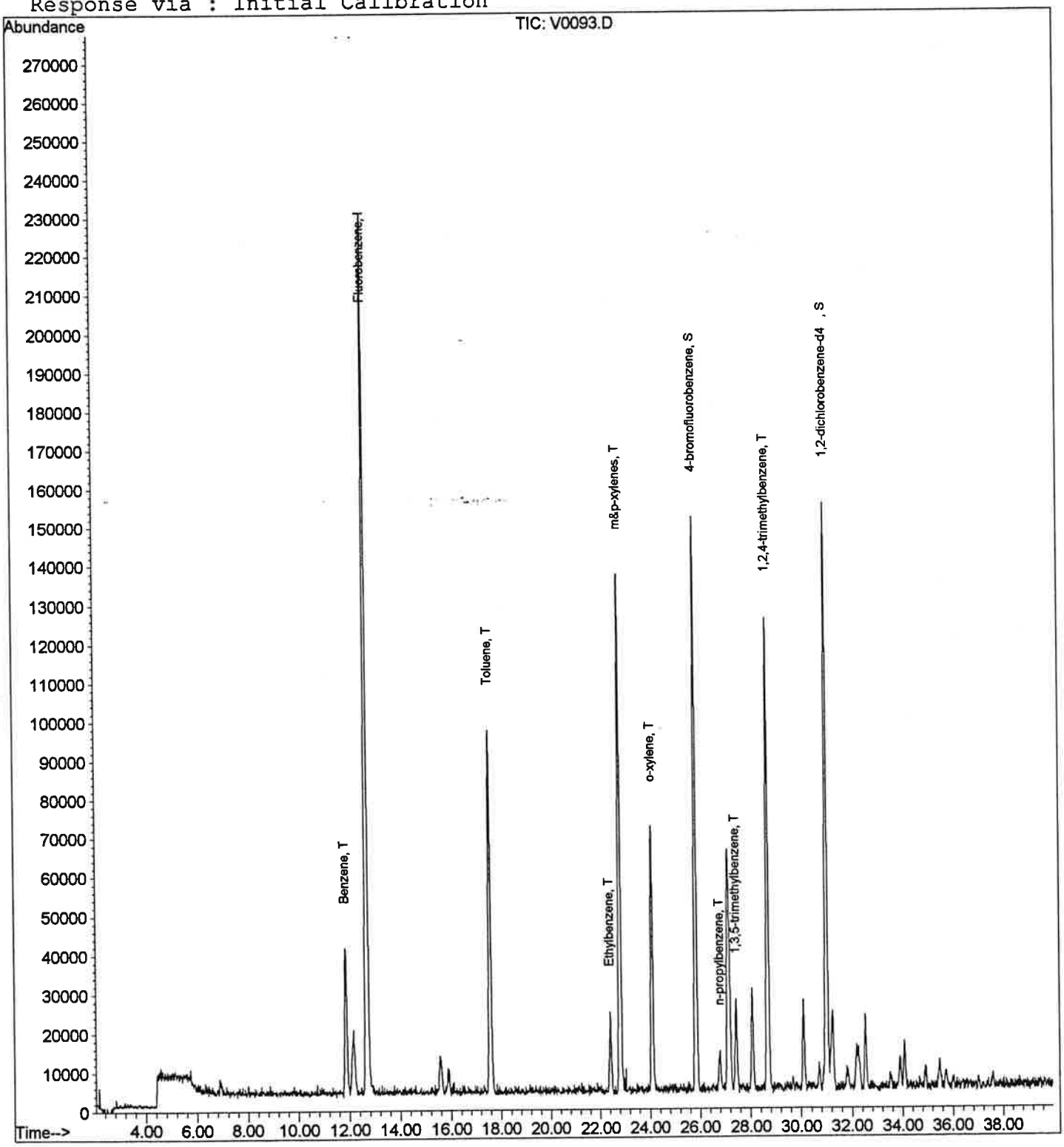
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0093.D
Acq On : 19 Mar 2000 2:56 am
Sample : A-104.6
Misc : AHA - Lyondell - RC-EC-33-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:22 2000

Vial: 16
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0094.D
Acq On : 19 Mar 2000 3:45 am
Sample : A-104.7
Misc : AHA - Lyondell - RC-EC-00-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:21 2000

Vial: 2
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.68	96	597116	5.00	ug/L	0.00
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.83	95	171539	5.55	ug/L	0.00
Spiked Amount 5.000			Recovery =	111.00%		
55) 1,2-dichlorobenzene-d4	31.03	152	138474	6.25	ug/L	0.00
Spiked Amount 5.000			Recovery =	125.00%		
Target Compounds						Qvalue
19) Benzene	11.85	78	118461	1.01	ug/L	90
26) Toluene	17.57	91	540748	4.74	ug/L	99
35) Ethylbenzene	22.41	91	261477	2.04	ug/L	97
36) m&p-xylenes	22.81	106	524514	5.44	ug/L	98
37) o-xylene	24.09	91	567754	6.59	ug/L	99
45) n-propylbenzene	26.78	91	223136	1.42	ug/L	96
48) 1,3,5-trimethylbenzene	27.43	105	339831	3.76	ug/L	100
50) 1,2,4-trimethylbenzene	28.68	105	1349850	16.21	ug/L	98
53) 4-isopropyltoluene	29.70	119	54323	0.53	ug/L	97
61) Naphthalene	37.58	128	71281	2.78	ug/L	96

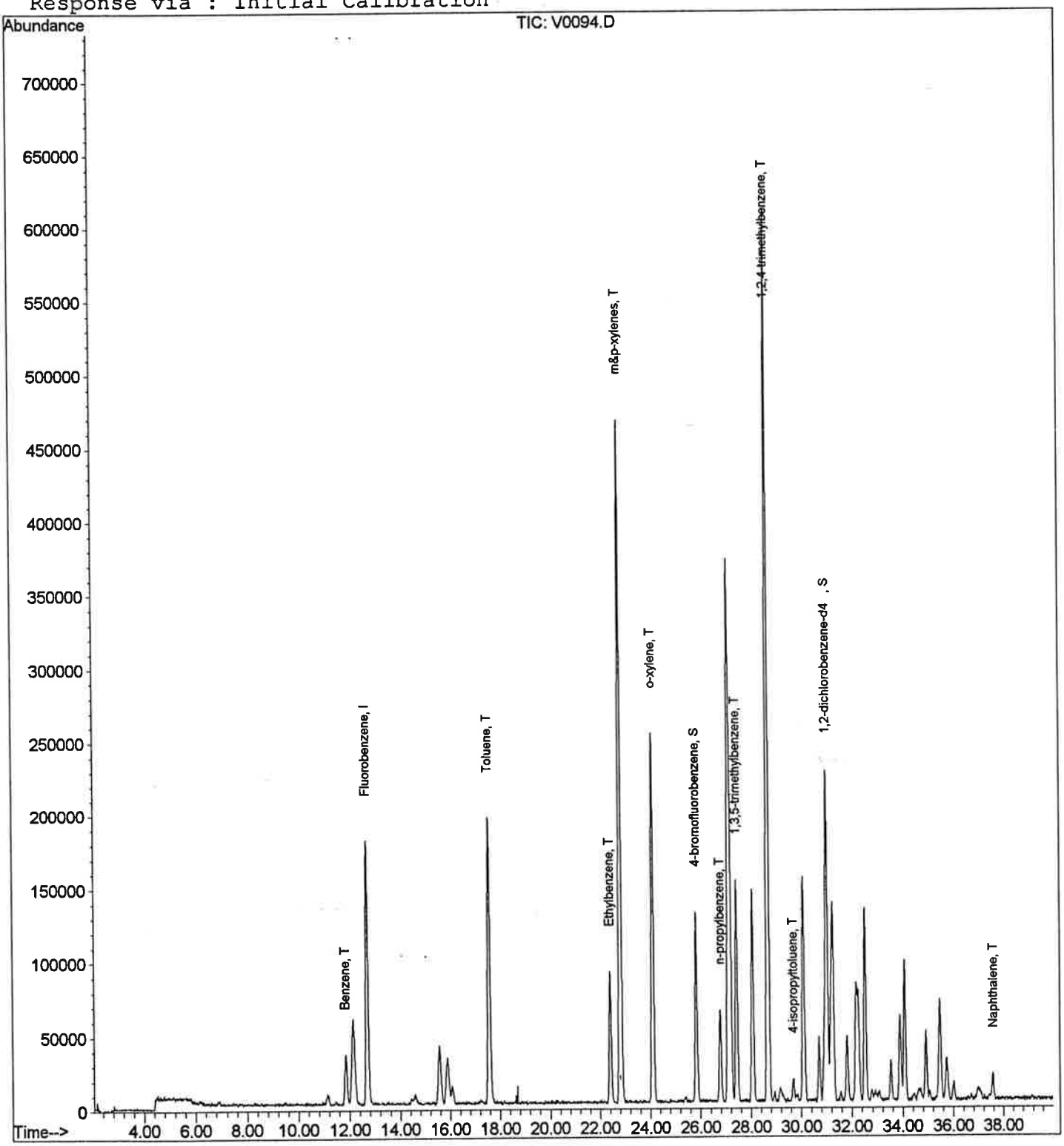
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0094.D
Acq On : 19 Mar 2000 3:45 am
Sample : A-104.7
Misc : AHA - Lyondell - RC-EC-00-0300
MS Integration Params: rteint.p
Quant Time: Mar 20 11:21 2000

Vial: 2
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0095.D
Acq On : 19 Mar 2000 4:34 am
Sample : A-104.8
Misc : AHA - Lyondell - RC-EC-00-0300A
MS Integration Params: rteint.p
Quant Time: Mar 20 11:19 2000

Vial: 3
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.68	96	740318	5.00	ug/L	0.00
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.83	95	191779	5.01	ug/L	0.00
Spiked Amount 5.000			Recovery =	100.20%		
55) 1,2-dichlorobenzene-d4	31.01	152	144543	5.26	ug/L	-0.01
Spiked Amount 5.000			Recovery =	105.20%		
Target Compounds						Qvalue
19) Benzene	11.84	78	103144	0.71	ug/L	94
26) Toluene	17.57	91	186278	1.32	ug/L	94
35) Ethylbenzene	22.40	91	35859	0.23	ug/L	93
36) m&p-xylenes	22.81	106	87321	0.73	ug/L	96
37) o-xylene	24.08	91	84894	0.80	ug/L	94
48) 1,3,5-trimethylbenzene	27.43	105	30092	0.27	ug/L	76
50) 1,2,4-trimethylbenzene	28.68	105	121721	1.18	ug/L	97

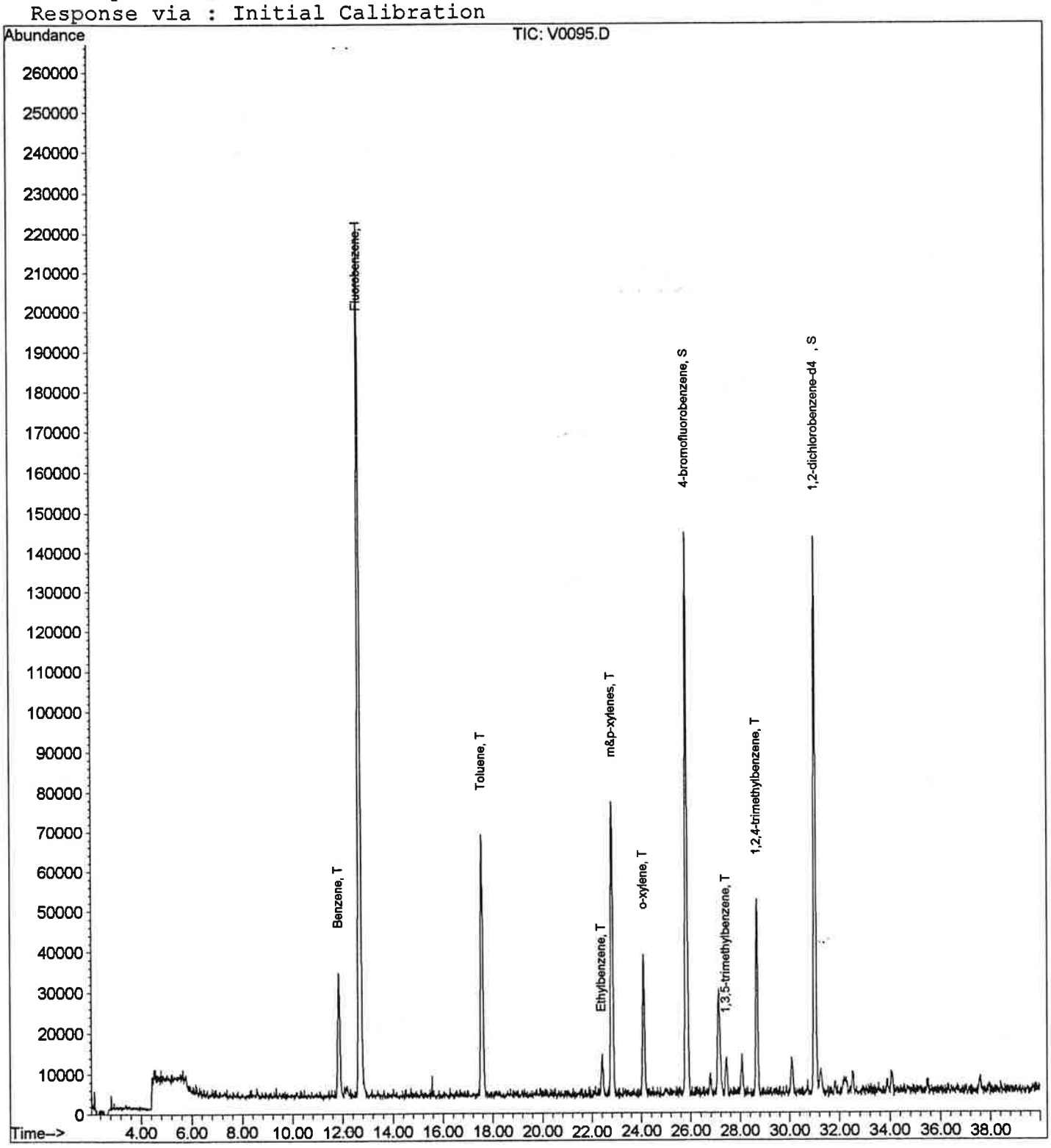
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0095.D
Acq On : 19 Mar 2000 4:34 am
Sample : A-104.8
Misc : AHA - Lyondell - RC-EC-00-0300A
MS Integration Params: rteint.p
Quant Time: Mar 20 11:19 2000

Vial: 3
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0096.D
Acq On : 19 Mar 2000 5:24 am
Sample : A-104.9
Misc : AHA - Lyondell - Rinsate Blank
MS Integration Params: rteint.p
Quant Time: Mar 20 11:14 2000

Vial: 4
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.68	96	771693	5.00	ug/L	0.00
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.83	95	198544	4.97	ug/L	0.00
Spiked Amount 5.000			Recovery = 99.40%			
55) 1,2-dichlorobenzene-d4	31.01	152	151600	5.30	ug/L	-0.01
Spiked Amount 5.000			Recovery = 106.00%			
Target Compounds						Qvalue
15) Chloroform	10.42	83	19016	0.28	ug/L	83
26) Toluene	17.57	91	14879	0.10	ug/L	81
50) 1,2,4-trimethylbenzene	28.68	105	13551	0.13	ug/L	98

(#) = qualifier out of range (m) = manual integration

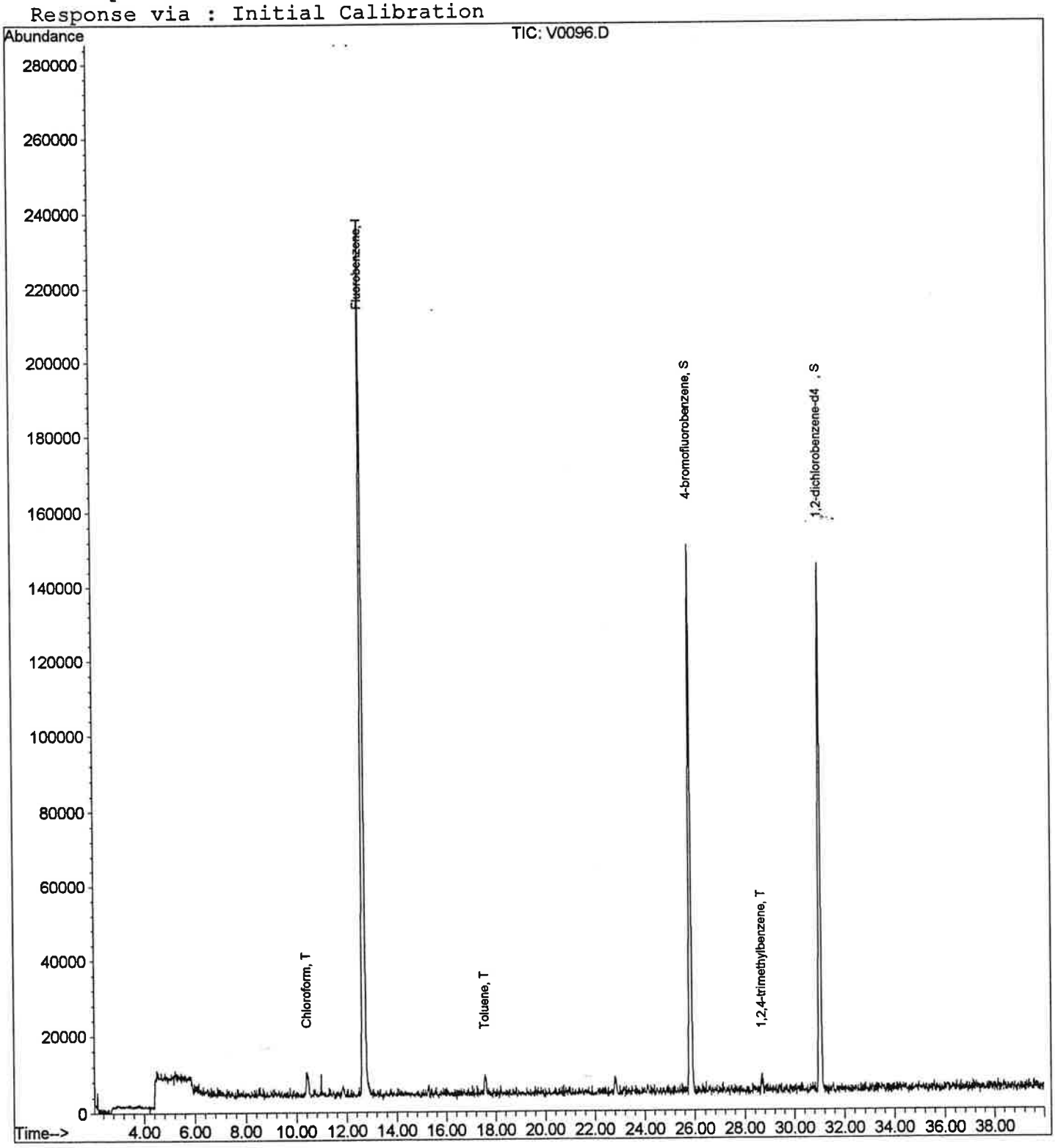
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0096.D
Acq On : 19 Mar 2000 5:24 am
Sample : A-104.9
Misc : AHA - Lyondell - Rinsate Blank
MS Integration Params: rteint.p
Quant Time: Mar 20 11:14 2000

Vial: 4
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0097.D Vial: 5
Acq On : 19 Mar 2000 6:13 am Operator: vb
Sample : A-104.10 Inst : 5971 - In
Misc : AHA - Lyondell - Trip Blank Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Mar 20 11:18 2000 Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.68	96	771875	5.00	ug/L	0.00
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.83	95	199652	5.00	ug/L	0.00
Spiked Amount 5.000			Recovery = 100.00%			
55) 1,2-dichlorobenzene-d4	31.03	152	152636	5.33	ug/L	0.00
Spiked Amount 5.000			Recovery = 106.60%			
Target Compounds						Qvalue
15) Chloroform	10.42	83	197636	2.95	ug/L	99
24) Bromodichloromethane	15.27	83	82748	2.36	ug/L	98
31) Dibromochloromethane	20.09	129	17721	1.07	ug/L	90

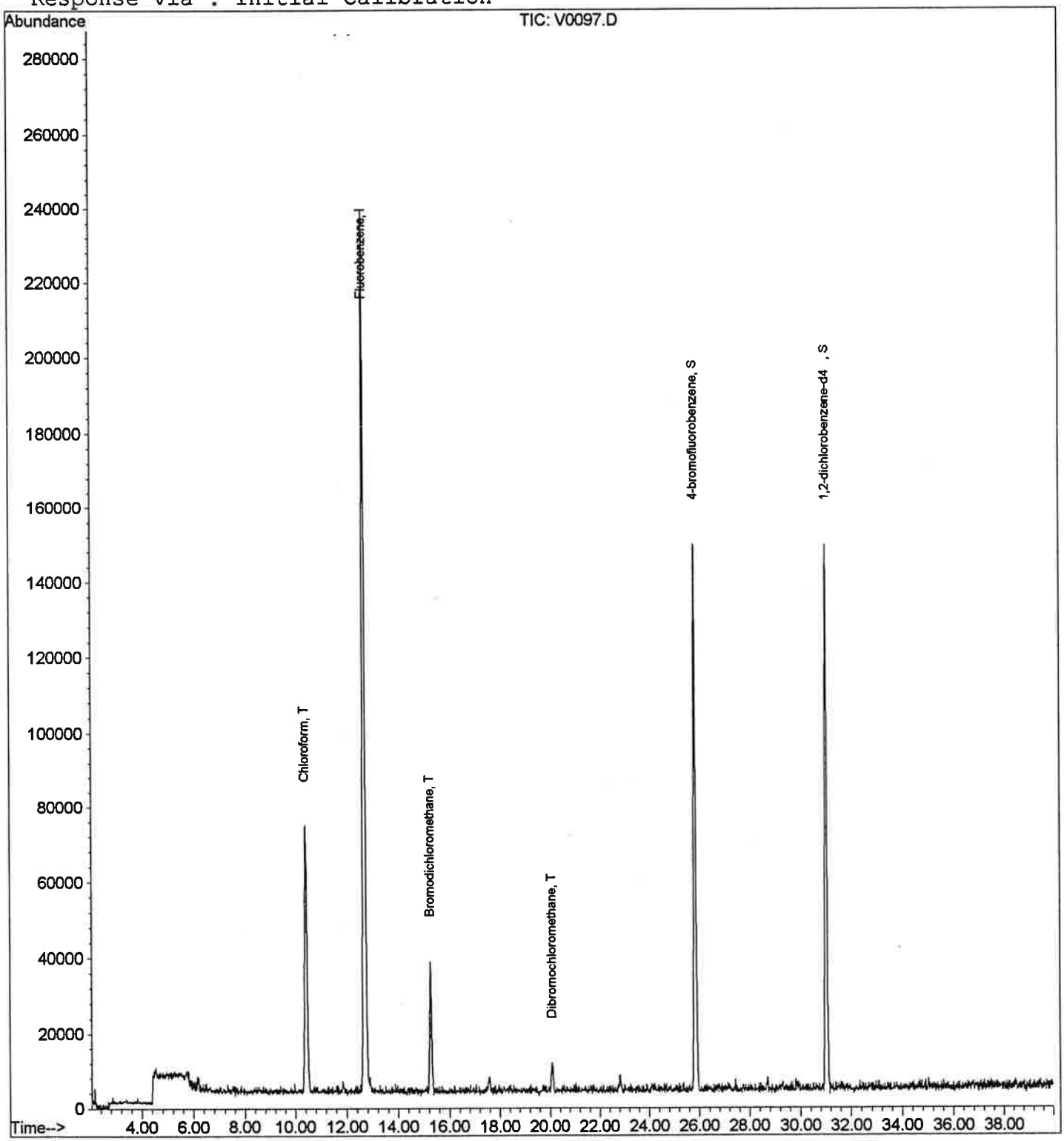
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0097.D
Acq On : 19 Mar 2000 6:13 am
Sample : A-104.10
Misc : AHA - Lyondell - Trip Blank
MS Integration Params: rteint.p
Quant Time: Mar 20 11:18 2000

Vial: 5
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



RELIANCE LABORATORIES, INC.

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Matrix Spike - Sample No.: Blank

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Benzene	3.00	0.00	3.17	106	(80-120)
Toluene	3.00	0.00	3.07	102	(80-120)
Ethylbenzene	3.00	0.00	3.07	102	(80-120)
m&p-xylenes	3.00	0.00	2.88	96	(80-120)
o-xylenes	3.00	0.00	3.03	101	(80-120)
Styrene	3.00	0.00	2.94	98	(80-120)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	3.00	3.60	120	13	20	(80-120)
Toluene	3.00	3.51	117	13	20	(80-120)
Ethylbenzene	3.00	3.37	112	9	20	(80-120)
m&p-xylenes	3.00	3.23	108	11	20	(80-120)
o-xylenes	3.00	3.53	118	15	20	(80-120)
Styrene	3.00	3.56	119	19	20	(80-120)

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Comments: _____

_____

4A

EPA SAMPLE NO.

VOLATILE METHOD BLANK SUMMARY

Blank1

Lab Name: PTL Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Lab File ID: V0086.D Lab Sample ID: vblk01

Date Analyzed: 03/18/00 Time Analyzed: 21:13

GC Column: DB-624 ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: HP-5971A

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	ER-33	A-104.1	V0088.D	22:51
02	ER-00	A-104.2	V0089.D	23:39
03	EL-21	A-104.3	V0090.D	00:29
04	EL-00	A-104.4	V0091.D	01:18
05	EC-70	A-104.5	V0092.D	02:07
06	EC-33	A-104.6	V0093.D	02:56
07	EC-00	A-104.7	V0094.D	03:45
08	EC-00A	A-104.8	V0095.D	04:34
09	RB	A-104.9	V0096.D	05:24
10	TB	A-104.10	V0097.D	06:13

COMMENTS

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0086.D
Acq On : 18 Mar 2000 9:13 pm
Sample : vblk01
Misc : Method Blank
MS Integration Params: rteint.p
Quant Time: Mar 20 11:27 2000

Vial: 9
Operator: vb
Inst : 5971 - In
Multiplr: 1.00
Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.68	96	818465	5.00	ug/L	0.00
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.84	95	252844	5.97	ug/L	0.01
Spiked Amount 5.000			Recovery =	119.40%		
55) 1,2-dichlorobenzene-d4	31.02	152	200353	6.60	ug/L	0.00
Spiked Amount 5.000			Recovery =	132.00%		

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
V0086.D RUN524.M Mon Mar 20 11:39:40 2000 Page 1

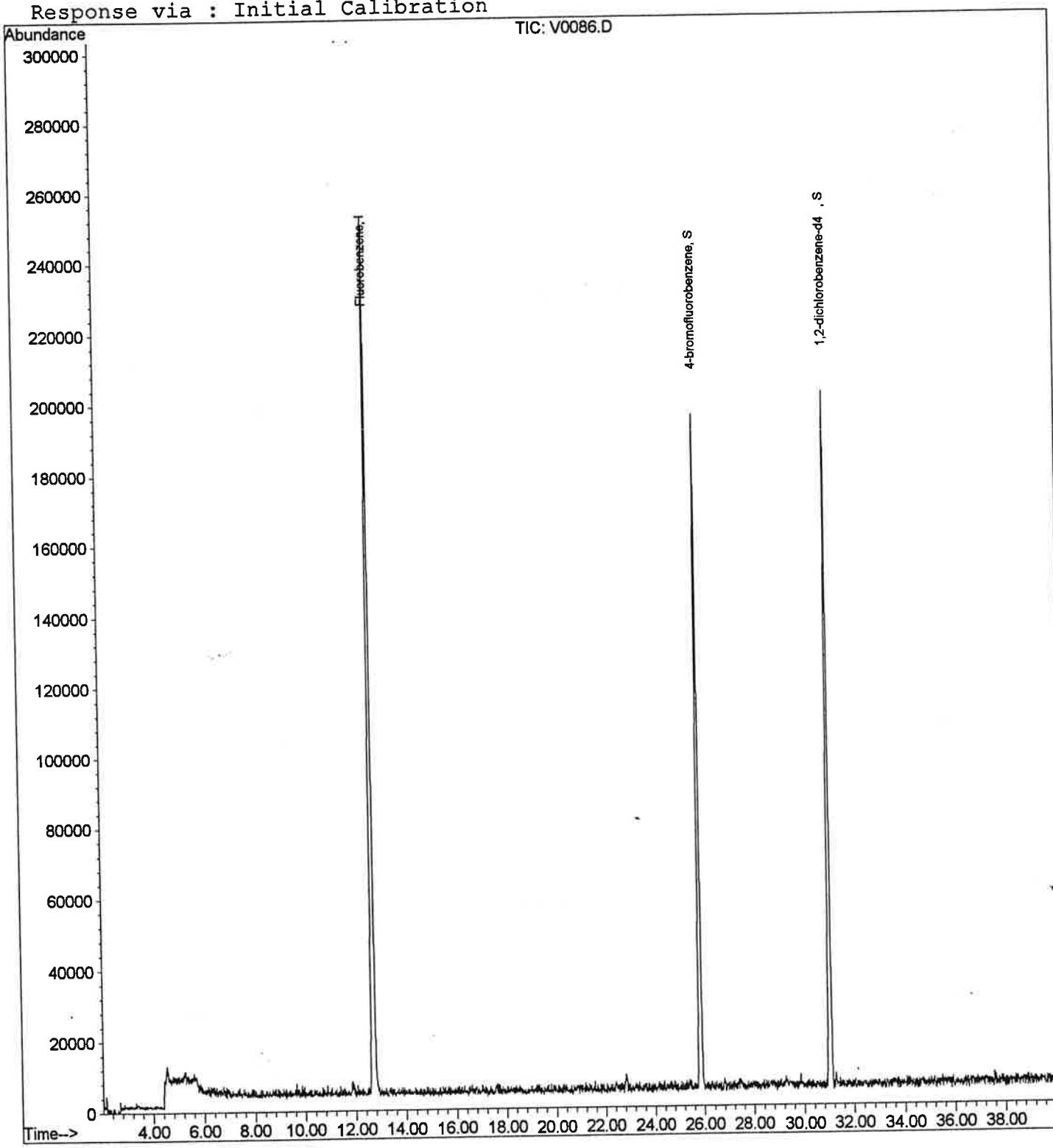
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0086.D
Acq On : 18 Mar 2000 9:13 pm
Sample : vblk01
Misc : Method Blank
MS Integration Params: rteint.p
Quant Time: Mar 20 11:27 2000

Vial: 9
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\V0087.D
Acq On : 18 Mar 2000 10:02 pm
Sample : vblk02
Misc : Method Blank
MS Integration Params: rteint.p
Quant Time: Mar 20 11:27 2000

Vial: 10
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Quant Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration
DataAcq Meth : RUN524

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.68	96	837747	5.00	ug/L	0.00
System Monitoring Compounds						
43) 4-bromofluorobenzene	25.83	95	255807	5.90	ug/L	0.00
Spiked Amount 5.000			Recovery = 118.00%			
55) 1,2-dichlorobenzene-d4	31.02	152	211198	6.80	ug/L	0.00
Spiked Amount 5.000			Recovery = 136.00%			

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
V0087.D RUN524.M Mon Mar 20 11:39:50 2000

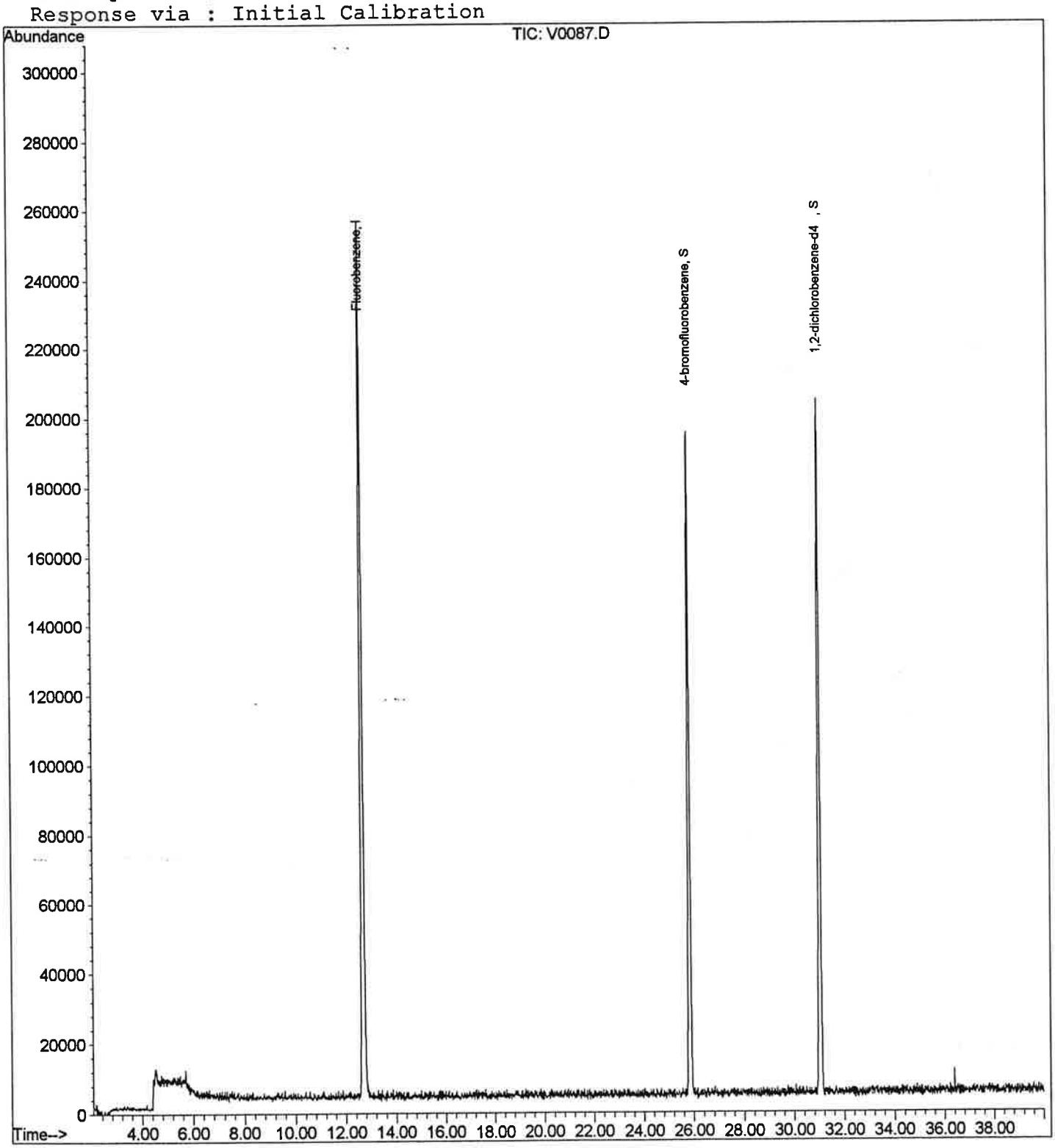
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V0087.D
Acq On : 18 Mar 2000 10:02 pm
Sample : vblk02
Misc : Method Blank
MS Integration Params: rteint.p
Quant Time: Mar 20 11:27 2000

Vial: 10
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Quant Results File: RUN524.RES

Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics
Last Update : Mon Mar 20 10:48:36 2000
Response via : Initial Calibration



5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

Lab Name: PTL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Lab File ID: V0082.D BFB Injection Date: 03/18/00

Instrument ID: HP-5971A BFB Injection Time: 18:16

GC Column: DB-624 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	16.8
75	30.0 - 66.0% of mass 95	39.8
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	83.1
175	4.0 - 9.0% of mass 174	5.8 (7.0)1
176	93.0 - 101.0% of mass 174	80.0 (96.3)1
177	5.0 - 9.0% of mass 176	5.8 (7.3)2

1-Value is % mass 174 2-Value is % mass 176

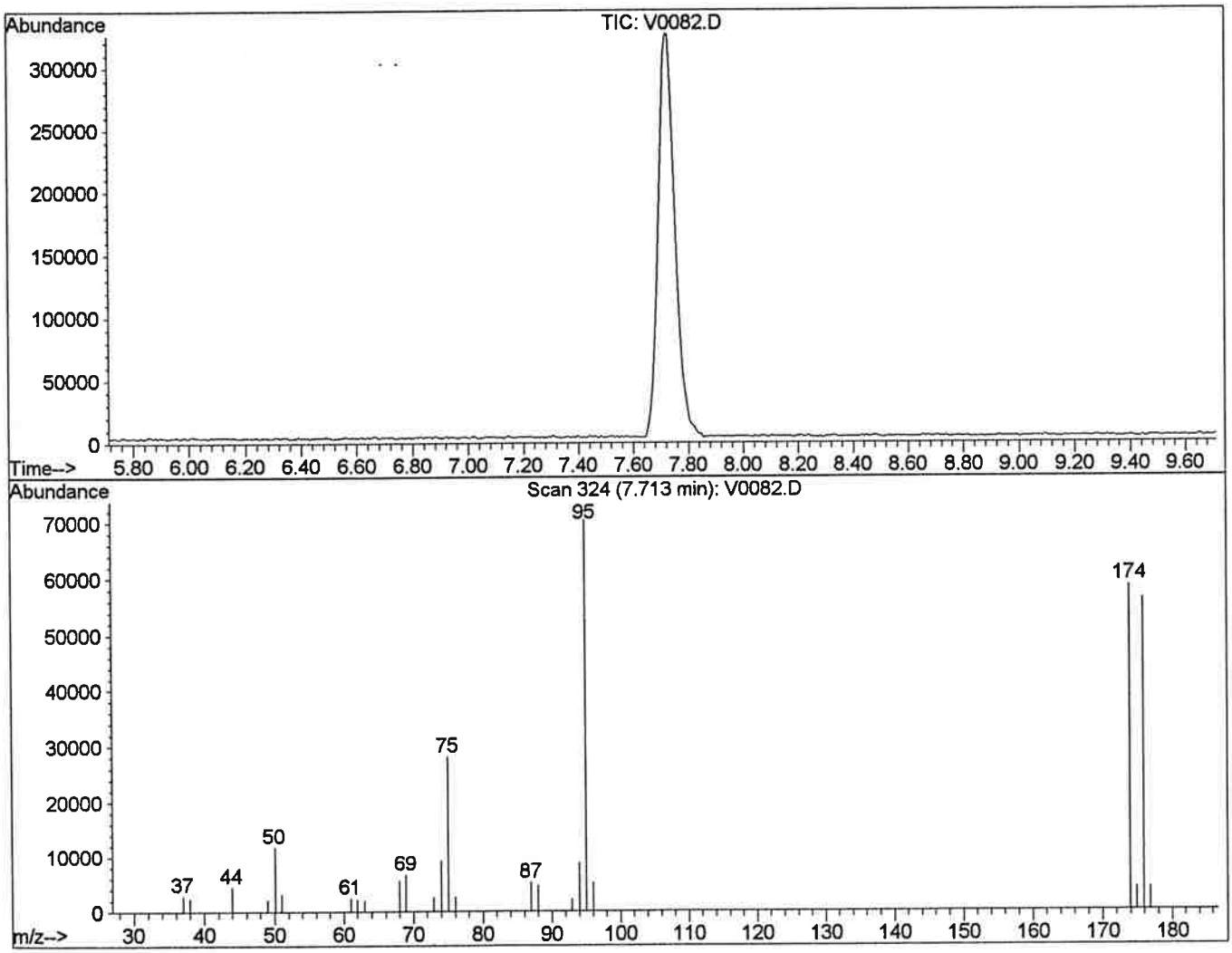
THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	ICC005	V0083.D	03/18/00	18:48
02	VSTD002	ICC002	V0084.D	03/18/00	19:36
03	VSTD001	ICC001	V0085.D	03/18/00	20:25
04	BLANK1	VBLK01	V0086.D	03/18/00	21:13
05	BLANK2	VBLK02	V0087.D	03/18/00	22:02
06	ER-33	A-104.1	V0088.D	03/18/00	22:51
07	ER-00	A-104.2	V0089.D	03/18/00	23:39
08	EL-21	A-104.3	V0090.D	03/19/00	00:29
09	EL-00	A-104.4	V0091.D	03/19/00	01:18
10	EC-70	A-104.5	V0092.D	03/19/00	02:07
11	EC-33	A-104.6	V0093.D	03/19/00	02:56
12	EC-00	A-104.7	V0094.D	03/19/00	03:45
13	EC-00A	A-104.8	V0095.D	03/19/00	04:34
14	RB	A-104.9	V0096.D	03/19/00	05:24
15	TB	A-104.10	V0097.D	03/19/00	06:13

BFB

Data File : C:\HPCHEM\1\DATA\V0082.D
Acq On : 18 Mar 2000 6:16 pm
Sample : bfb
Misc : bfb
MS Integration Params: rteint.p
Method : C:\HPCHEM\1\METHODS\RUN524.M (RTE Integrator)
Title : 524.2 Purgable Organics

Vial: 1
Operator: vb
Inst : 5971 - In
Multiplr: 1.00



Spectrum Information: Scan 324

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	16.8	11799	PASS
75	95	30	80	39.8	28064	PASS
95	95	100	100	100.0	70432	PASS
96	95	5	9	7.4	5242	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	83.1	58552	PASS
175	174	5	9	7.0	4106	PASS
176	174	95	101	96.3	56360	PASS
177	176	5	9	7.3	4094	PASS

V0082.D RUN524.M Mon Mar 20 11:11:07 2000

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: PTL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Instrument ID: HP-5971A Calibration Date(s): 03/18/00 03/18/00

Heated Purge (Y/N): N Calibration Times: 18:48 20:25

GC Column: DB-624 ID: 0.53 (mm)

LAB FILE ID: RRF1 = V0085.D RRF2 = V0084.D
RRF5 = V0083.D = =

COMPOUND	RRF1	RRF2	RRF5			RRF	% RSD
Dichlorodifluoromethane	0.154	0.135	0.136			0.142	7.3
Chloromethane	0.282	0.235	0.225			0.247	12.3
Vinyl chloride	0.268	0.242	0.238			0.249	6.4
Bromomethane	0.205	0.189	0.151			0.182	15.1
Chloroethane	0.166	0.155	0.147			0.156	6.3
Trichlorofluoromethane	0.382	0.346	0.354			0.361	5.3
1,1-dichloroethene	0.446	0.399	0.393			0.413	7.0
Methylene chloride	0.291	0.260	0.238			0.263	10.1
trans-1,2-dichloroethene	0.454	0.412	0.396			0.421	7.1
1,1-dichloroethane	0.538	0.483	0.463			0.495	7.8
2,2-dichloropropane	0.289	0.273	0.290			0.284	3.4
cis-1,2-dichloroethene	0.439	0.411	0.381			0.410	7.0
Bromochloromethane	0.140	0.133	0.117			0.130	9.0
Chloroform	0.471	0.428	0.401			0.433	8.2
1,1,1-trichloroethane	0.377	0.349	0.351			0.359	4.4
Carbon tetrachloride	0.302	0.285	0.307			0.298	3.9
1,1-dichloropropene	0.424	0.382	0.391			0.399	5.6
Benzene	1.079	0.965	0.908			0.984	8.9
1,2-dichloroethane	0.175	0.166	0.148			0.163	8.2
Trichloroethene	0.353	0.327	0.333			0.337	4.1
1,2-dichloropropane	0.248	0.219	0.207			0.225	9.5
Dibromomethane	0.078	0.080	0.083			0.080	3.1
Bromodichloromethane	0.253	0.221	0.207			0.227	10.4
cis-1,3-dichloropropene	0.215	0.219	0.214			0.216	1.2
Toluene	1.036	0.942	0.891			0.956	7.7
trans-1,3-dichloropropene	0.106	0.116	0.117			0.113	5.4
1,1,2-trichloroethane	0.093	0.089	0.086			0.089	4.1
Tetrachloroethene	0.333	0.278	0.278			0.296	10.7
1,3-dichloropropane	0.182	0.165	0.156			0.168	8.0
Dibromochloromethane	0.111	0.108	0.103			0.107	3.8
1,2-dibromoethane	0.081	0.087	0.087			0.085	4.4
Chlorobenzene	0.602	0.567	0.505			0.558	8.8
1,1,1,2-tetrachloroethane	0.121	0.130	0.128			0.126	3.7
Ethylbenzene	1.176	1.053	0.997			1.075	8.5
m&p-xylenes	0.870	0.792	0.761			0.807	7.0
o-xylene	0.803	0.707	0.653			0.721	10.6
Styrene	0.621	0.558	0.515			0.565	9.4
Bromoform	0.005	0.035	0.038			0.026	70.7
Isopropylbenzene	1.111	1.001	0.944			1.018	8.3

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: PTL Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument ID: HP-5971A Calibration Date(s): 03/18/00 03/18/00

Heated Purge (Y/N): N Calibration Times: 18:48 20:25

GC Column: DB-624 ID: 0.53 (mm)

LAB FILE ID: RRF1 = V0085.D RRF2 = V0084.D
RRF5 = V0083.D = =

COMPOUND	RRF1	RRF2	RRF5			$\overline{RRF}$	% RSD
Bromobenzene	0.326	0.281	0.250			0.286	13.4
1,1,2,2-tetrachloroethane	0.067	0.073	0.064			0.068	6.9
1,2,3-trichloropropane	0.035	0.048	0.047			0.043	17.3
n-propylbenzene	1.437	1.280	1.220			1.312	8.5
2-chlorotoluene	0.721	0.636	0.574			0.644	11.5
4-chlorotoluene	0.757	0.683	0.631			0.690	9.2
1,3,5-trimethylbenzene	0.822	0.746	0.705			0.758	7.8
tert-butylbenzene	0.742	0.686	0.650			0.693	6.7
1,2,4-trimethylbenzene	0.777	0.695	0.620			0.697	11.3
sec-butylbenzene	1.271	1.120	1.084			1.158	8.6
1,3-dichlorobenzene	0.429	0.384	0.345			0.386	10.9
4-isopropyltoluene	0.958	0.843	0.794			0.865	9.7
1,4-dichlorobenzene	0.417	0.369	0.328			0.371	11.9
1,2-dichlorobenzene	0.327	0.290	0.249			0.289	13.6
n-butylbenzene	1.000	0.859	0.792			0.883	12.0
1,2,4-trichlorobenzene	0.207	0.179	0.145			0.177	17.7
Hexachlorobutadiene	0.124	0.117	0.111			0.117	5.4
Naphthalene	0.269	0.233	0.142			0.215	30.4
1,2,3-trichlorobenzene	0.152	0.134	0.108			0.131	17.0
4-bromofluorobenzene	0.255	0.262	0.260			0.259	1.4
1,2-dichlorobenzene-d4	0.192	0.192	0.173			0.185	6.0

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: PTL Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Lab File ID (Standard): V0084.D Date Analyzed: 03/18/00

Instrument ID: HP-5971A Time Analyzed: 19:36

GC Column: DB-624 ID: 0.53 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	641406	12.69				
	UPPER LIMIT	1282812	12.19				
	LOWER LIMIT	320703	13.19				
	EPA SAMPLE NO.						
01	BLANK1	818465	12.68				
02	BLANK2	837747	12.68				
03	ER-33	657396	12.69				
04	ER-00	703063	12.69				
05	EL-21	673178	12.69				
06	EL-00	715830	12.70				
07	EC-70	711244	12.69				
08	EC-33	753555	12.69				
09	EC-00	597116	12.68				
10	EC-00A	740318	12.68				
11	RB	771693	12.68				
12	TB	771875	12.68				

IS1 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

CHAIN OF CUSTODY

Customer: Lyondell Chemical
Address: 400 Frankfort Rd Monaca Pa. 15061
Phone (724) 728 - 6586
Fax: (724) 728 - 6498
E-Mail: b.petroff@worldnet.att.net

Applied Hydrology Associates, Inc.
400 Frankfort Rd, Monaca, Pa 15061

Date: 3/14/00
LAB ID: _____
Project ID: _____
Trun around time Standard
(stanrard / rush)
Fax results: (Y) N
E-Mail results: (Y) N

Sampler Name: BDP
Preserved Y (N)
Sample Intact: (Y) N

Sample ID	Date Spld.	Time Spld	# of containers	MATRIX: Water	MATRIX: Soil	MATRIX: Other	ORGANICS: EPA Test Method 524.2	ORGANICS: BTEX (602/8020)	ORGANICS: TPH (418.1)	ORGANICS: VOA (624/8260) + 15	ORGANICS: BNA / BN / + 15	ORGANICS: Pest / Herb	ORGANICS: PCB's	ORGANICS: TCLP Organics / pp + 40	ORGANICS: Other	METALS: TCLP / RCRA (8)	METALS: Priority Pol. (13)	METALS: Total Metals (list below)	METALS: Dissolved Metals	METALS: Other	OTHERS: pH / CN / Sulfide	OTHERS: Fl pt / % Solids	OTHERS: O & G / TSS / TOX	OTHERS: BOD / COD / TOC	OTHERS	OTHERS	Notes:
RC-ER-33-0300	3/14/00	9:34	1	x			x																				
RC-ER-00-0300	3/14/00	9:36	1	x			x																				
RC-EL-16-0300	3/14/00	9:24	1	x			x																				
RC-EL-00 -0300	3/14/00	9:26	1	x			x																				
RC-EC-70-0300	3/14/00	9:31	1	x			x																				
RC-EC-33-0300	3/14/00	9:32	1	x			x																				
RC-EC-00-0300	3/14/00	9:33	1	x			x																				
RC-EC-00-0300A	3/14/00	9:34	1	x			x																				
Rinsate Blank	3/14/00	10:00	1	x			x																				
Trip Blank	3/14/00	8:00	1	x			x																				

Instructions: Please Fax results to and Skip Meier: (303) 873 - 6110 and E-Mail results to Brian Petroff: b.petroff@worldnet.att.net.

Submitted by: BDP
Agent of: AHA
Received by: [illegible]
Agent of: PTL
Date / Time: 3-15-00 1000

Submitted by: _____
Agent of: _____
Received by: _____
Agent of: _____
Date / Time: _____

Submitted by: _____
Agent of: _____
Received by: _____
Agent of: _____
Date / Time: _____

Report to: _____
Dellverables:
- [ ] Standard
- [ ] Reduced
- [ ] Customized

AHA File name:
Chain of Custody for Raccoon Creek

3/14/0011:55 AM

38